unassisted by any engineering advice. We understand that the permanent secretary, Dr. Hodgetts, recognizes the necessity of such a department. Why it is that the Ministers are so blind to the importance of a progressive and useful movement by which every municipality would benefit in Ontario, we must confess we are at an entire loss to know. General poverty of the Province cannot be made an excuse, and surely there are plenty of examples of the soundness of the policy to warrant its adoption.

Can. Eng., Vol. 17, Page 261.

The last paragraph but one in the first column should have read:—

"Professor Dunbar's experiments and conclusions, published since the Commission's report, leave little doubt that Dibden's theory on which he based the contact bed has no scientific basis."

"Professor Dibden" should read "Professor Dunbar." The reference in the first instance is to Dunbar's "Modern Treatment of Sewage Disposal," in which he freely explains by the result of experiments the working of contact beds. The reference in the second instance is to the first conception of contact beds as illustrated by the experimental tanks for the London County Council by Santo Crimp and Dibden.—Ed. San. Rev.

OZONE TREATMENT.

Report by Toronto City Engineer to the Corporation.

Referring to the City Clerk's letter of the 18th instant, forwarding a copy of series of enquiries by Alderman R. H. Graham, as follows:—

1. "What experts and other officials recommended to the Board of Control the system of sand filtration for the water supply of Toronto?

2. "Was the question of electric filtration considered? If so, why was it not recommended?

3. "What part of the plant now being constructed would be available in the event of electrical filtration being found suitable and more economical?

4. "In case a change should be adopted from sand filtration to electric filtration after the completion of the present works, what would be the estimated cost of such change?

5. "If the work was suspended and the change made in the near future, what would be the estimated cost?"

I beg to report as follows:—

In answer to the first question, this is fully set out in the report of the Board of Control, No. 15, of May 26th, 1908, and it will also be seen that the report recommending the present system is signed by Charles Sheard, Medical Health Officer; C. L. Fellowes, Deputy City Engineer, and W. M. Harrison, M.D., representative of Board of Control

In reply to the second question, this can be better answered by the gentlemen who presented the report.

In answer to the third query, I understand the term "electrical filtration" to refer probably to the ozone treatment of water. It is difficult for me to state just what part of the present plant would be available for the ozone process, because I have never had an opportunity of seeing a plant of this description in successful operation, and I do not know precisely of what it would consist. The only ozone plant for treating a municipal supply which I have ever heard of upon the American continent is one at Lindsay, Ont., very recently completed, or perhaps not yet entirely completed. So far as I have heard, ozone treatment has usually been considered and recommended for use on the effluent from filters of the ordinary type. If such should prove to be the case, the whole of the plant now being completed would be available in connection with ozone.

The following statement in the Canadian Engineer of September 10th, 1909, page 288, bears directly upon this point:—

"Disinfection or sterilization may be feasible as an adjunct or accessory to filtration, but as a method of purifying water by itself it is absolutely useless. For instance, if we could obtain a water entirely free from all suspended matter, and containing only organic matter in solution along with the presence of bacteria, then sterilization might be effective. But no such water is ever placed before us to deal with, unless it has been first treated by efficient filtration. We, therefore, find that in all cases of so-called sterilization processes filtration of the water is insisted upon as a primary necessity. We have a case illustrative of this point in Canada at the present time at Lindsay, Ont. At Lindsay there has been recently installed an ozone sterilizing plant. The water is first treated by filtration and then charged with the ozone gas. The filtration is only of a rough-and-ready character, as it is expected that the ozone will do the real work. According to a recent analysis of the treated water, however, we find that the filters remove 67 per cent of the bacteria, and that the ozone only removes a further 57 per cent. of the bacteria from this partially clarified water, the total percentage removal of bacteria from the original water by the combined processes being only 87 per cent., or 8 per cent. below the standard required for mechanical filters.

"In the above case, if the filtration had been of an efficient character to remove the whole of, or practically the whole of the suspended matter, the result might have been satisfactory. Too much was asked of ozone and too little of filtration.

"The fact of the matter is that, up to the present, no data exist which will allow of a pronouncement in favor of sterilization as opposed to filtration. On the other hand, sterilization may be a useful and efficient addition to filtration in certain cases where the original organic impurities are so high as to leave an undrinkable water with a bacterial removal of even over 99 per cent, etc."

In reply to the fourth enquiry, the whole subject of ozone treatment is too indefinite to allow me to make any sort of an estimate of the cost of applying it effectively to the effluent from the plant now under construction.

The fifth question is, perhaps, sufficiently covered by the above.

In connection with the above replies I had the opportunity of consulting Mr. Allen Hazen in regard to same, and he fully concurs in the above report.

THE NEW FILTRATION PLANT FOR WILKINSBURG.*

F. B. Leopold, Pittsburg.

The Pennsylvania Water Company, which supplies water to the town of Wilkinsburg and a number of adjacent towns, secures its water from the Allegheny River by means of a series of galleries located in the river bed. As it comes from the galleries it is practically clear and of a rather unusual purity for a supply of this kind. After considerable litiga tion, however, on the part of the town of Wilkinsburg, in which it was claimed by the municipality that the water was not of the degree of purity that the company should furnish

*A paper read before the Central States Waterworks Association.